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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/681,481

10/08/2003

Paul A. Farrar

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02/12/2008

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EXAMINER

WATSON, JOY L

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

02/12/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/681,481	<b>Applicant(s)</b> FARRAR, PAUL A.	
	<b>Examiner</b> JOY WATSON	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 December 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4,6-11,14-17,20-27,41,42 and 44-46 is/are pending in the application.
- 4a) Of the above claim(s) 3,4,6,8,15,21,26,27 and 45 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,7,9-11,14,16,17,20,22-25,41,42,44 and 46 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 26, 2007 has been entered.

### ***Election/Restrictions***

2. Claims 30-40 and 47-50 are cancelled from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on November 13, 2006.

### ***Other Formal Matters***

3. Additionally claims 5, 12-13, 18-19, 28-29 and 43 have been cancelled in the correspondence dated December 26, 2007. Claims 3-4, 6, 8, 15, 26-27 and 45 have been withdrawn in the correspondence dated December 26, 2007.

### ***Response to Arguments***

4. Applicant's arguments filed December 26, 2007 have been fully considered but they are not persuasive.

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5. In response to applicant's argument that Jackson does not teach immersing a semiconductor substrate in a halogenated hydrocarbon carrier fluid, the examiner respectfully disagrees. Jackson teaches that a semiconductor substrate is suspended (or immersed) in a fluid (paragraph that bridges col. 10 and 11). Jackson also teaches that the fluid comprises halogenated hydrocarbons (col. 3 lines 35-48) therefore the fluid is a halogenated hydrocarbon carrier fluid.

### *Specification*

6. The amendment to applicant's specification dated November 26, 2007 has been entered.

### *Claim Rejections - 35 USC § 103*

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

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3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 1, 2, 7, 9-11, 14, 16-17, 20, 22-25, 41, 42, 44, 46 stand rejected under 35

U.S.C. 103(a) as being unpatentable over Jackson et al (U.S. 5,013,366) in view of Tipton et al (U.S. 6,800,142).

Jackson teaches a method of cleaning a contaminated substrate (col.7, lines 3-5). Jackson describes a second specific embodiment wherein cleaning procedure comprises suspending (immersing) substrate in a liquid suspension medium (reads on “a carrier fluid”, as claimed), such as deionized water; forming a supercritical fluid in contact with the substrate and shifting the phase of the fluid (reads on “changing a thermodynamic condition of the supercritical fluid), thus forming gas bubbles in the liquid suspension medium (Fig. 7; col. 2, lines 36-41; col.4, lines 10-13; paragraph, bridging col.10 and col.11). The supercritical fluid can be formed from carbon dioxide (col. 11, line 8). With regard to claims 9 and 10, see col. 8, lines 10-20, wherein shifting the phase of the fluid is achieved by changing both a pressure and temperature of the supercritical fluid. Jackson also teaches the use of mechanical energy, such as sonic energy to enhance cleaning action (col.11, lines 36-40).

With regard to claim 25, Jackson does not specifically indicate the use of megasonic wave energy. However, Jackson teaches that high energy sonic bursts agitate the substrate to promote the breaking of bonds between the contaminants and the substrate being cleaned (paragraph, bridging col. 11 and 12), but Tipton teaches that megasonic waves while cleaning a semiconductor (col. 3 lines 35-48). Since Jackson provides

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motivation to apply high energy sonic bursts, one skilled in the art would have found obvious to utilize megasonic waves as taught by Tipton while cleaning the substrate in the teaching of Jackson with the reasonable expectation of success.

The indicated second specific embodiment of Jackson remains silent about including a halogenated hydrocarbon into the cleaning process. However, describing a different embodiment, Jackson teaches using halogenated hydrocarbons as the carrier fluid for producing densified/supercritical fluids. Carbon dioxide, along with the carrier fluid, is also used to aid in the cleaning process (col.3, lines 35-48). Since Jackson teaches removal of photoresist, since the use of halogenated hydrocarbons within densified/supercritical fluids to enhance removal of photoresist is conventionally known in the art (see, for example the reference to Tipton), one skilled in the art motivated by Tipton would have found obvious to utilize halogenated hydrocarbon in addition to carbon dioxide while forming densified/supercritical conditions in order to enhance removal of photoresist in the second specific embodiment of Jackson. With regard to claim 44, as an example of halogenated hydrocarbon, Tipton teaches the use of chlorocarbon (col. 4, lines 25-31) within the densified fluid in order to enhance removal of photoresist and therefore it also would be obvious to use the chlorocarbon within the teaching of Jackson.

*Conclusion*

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOY WATSON whose telephone number is (571)270-1267. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. W./  
Examiner, Art Unit 1792

/Michael Cleveland/  
Supervisory Patent Examiner, Art Unit 1792